

***Drawings***

The drawings were received on 7/22/2009. These drawings are accepted.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 13, 14 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Lubsen et al. (US Pat No 4,382,552).

Re claim 1, Lubsen et al. shows a nozzle (Fig. 1, 1) for spraying a liquid into the atmosphere, characterized in that it comprises: a secondary jet (Fig. 2, 5) connected to means (30) for supplying said liquid and including means (24) for effecting a first fractional distillation of said liquid and an expansion chamber (27); a principal jet (3) connected to means for generating a gaseous flow (col. 2, lines 5-7), including means (42) for effecting a second fractional distillation of said liquid and an outlet orifice (Fig. 1, 4) to the atmosphere; and means (Fig. 2, 13) for connecting said secondary jet to said principal jet, connecting the expansion chamber (45) and the means (42) for effecting the second fractional distillation of said liquid.

Re claim 2, Lubsen et al. shows that the secondary jet (Fig. 2, 5) is in the form of a cylinder, the central portion of which is occupied by the principal jet (3), which also has a cylindrical configuration, the annular cross-sectional space created thereby forming the expansion chamber (27).

Re claim 3, Lubsen et al. shows that the first and second fractional distillation means comprise a first and second Venturi (Fig. 2, 24, 42) respectively.

Re claim 4, Lubsen et al. shows that the first Venturi (Fig. 2, 24) comprises a tapering part (left of 26) followed by a calibrated cylindrical portion (26) terminating in the expansion chamber (27).

Re claim 5, Lubsen et al. shows that the tapering part (Fig. 2, left of 26) is in the form of a truncated cone, which is adapted to the calibrated cylindrical portion (26) through the intermediary of a bearing (23) so that the reduction in cross-section between the supply conduit (30) and the calibrated cylindrical portion (26) is discontinuous.

Re claim 6, Lubsen et al. shows that the calibrated cylindrical portion (Fig. 2, 26) terminates in the expansion chamber (27) in a recessed manner relative to the wall of said expansion chamber.

Re claim 7, Lubsen et al. shows that the second Venturi (Fig. 2, 42) includes a tapering part (left of 44) followed by a cylindrical portion (44) terminating in the atmosphere through the outlet orifice (Fig. 1, 4).

Re claim 8, Lubsen et al. shows that the means (Fig. 2, 13) for connection the secondary jet (5) to the principal jet (3) comprise a plurality of conduits (47) disposed radially between the expansion chamber (45) and the cylindrical portion (44) of the second Venturi.

Re claim 9, Lubsen et al. shows that the expansion chamber (Fig. 2, 45) has sudden variations in thickness along the longitudinal axis.

Re claim 10, Lubsen et al. shows that the expansion chamber (Fig. 2, 45) has the smallest thickness in the vicinity of the connection conduits (47).

Re claim 13, Lubsen et al. shows that said first fractional distillation means (Fig. 2, 24) for said liquid comprise two first Venturi (24, 29) terminating in the expansion chamber (27).

Re claim 14, Lubsen et al. shows that said first two Venturi (Fig. 2, 24, 29) each comprise a tapering part (left of 26, forward of 29) followed by a calibrated cylindrical portion (25, 26), said calibrated cylindrical portion having a different diameter for each first Venturi.

Re claim 21, Lubsen et al. does not show that it's for disinfecting premises used for medical, paramedical or food-processing purposes. However, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations. Ex parte Masham, 2 USPQ2d 1647 (1987).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lubsen et al. (US Pat No 4,382,552) as applied to claims 1-10, 13, 14 and 21 above, and further in view of Wanson et al. (FR 2,487,782).

Re claim 11, Lubsen et al. does not show that it additionally comprises means for affecting a third fractional distillation of said liquid.

However, Wanson et al. does teach a third fractional distillation of said liquid (Fig. 1, 7).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the nozzle of Lubsen et al. with the third fractional distillation of Wanson et al. as use of fractional distillation is known in the art.

Re claim 12, Lubsen et al. does not show that said third fractional distillation means comprise an ultrasonic resonator and a resonance chamber connected to the outlet orifice in the axis of the principal jet.

However, Wanson et al. does teach that said third fractional distillation means comprise an ultrasonic resonator (Fig. 1, 5) and a resonance chamber (11) connected to the outlet orifice in the axis of the principal jet.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the nozzle of Lubsen et al. with the chamber of Wanson et al. since ultrasonic resonance is known in the art.

Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lubsen et al. (US Pat No 4,382,552) in view of Abplanalp et al. (US Pat No 6,062,493).

Re claim 15, Lubsen et al. shows an apparatus for spraying a liquid into the atmosphere (Fig. 1, 1), characterized in that it comprises: a spray nozzle (4); means (col. 2, 5-7) for supplying gas under pressure, said means being connected to the principal jet (Fig. 2, 3); means (47) for supplying liquid, said means including a reservoir (9) containing said liquid, the orifice (13) of which is connected to the secondary jet (5); and means (col. 1, lines 10-20) for checking and regulating the fluids.

Lubsen et al. does not teach gas under pressure but water under pressure.

However, Abplanalp et al. does teach gas under pressure col. 3, line 37).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the nozzle of Lubsen et al. with the gas under pressure of Abplanalp et al. because switching out one fluid for another is known in the art.

Re claim 16, Lubsen et al. shows that the reservoir (Fig. 2, 9) is placed at a level such that the orifice (13) of said reservoir is lower than the spray nozzle (1).

Re claim 17, Lubsen et al. shows a method of spraying a liquid into the atmosphere, said method comprising steps which consist of: effecting a first fractional distillation (Fig. 2, 24) of said liquid by suction through a conduit (30), which has a first

Venturi (24) terminating in an expansion chamber (27) which is subjected to a negative pressure; and effecting a second fractional distillation of said liquid by suction through means (42) for connection to the expansion chamber (45) to a second Venturi (42) supplied by a gaseous flow under pressure.

Re claim 18, Lubsen et al. shows that the gas supply pressure of the second Venturi (Fig. 2, 42) is regulated (7) so that the pressure prevailing at the outlet (Fig. 1, 4) of said second Venturi is lower than the pressure prevailing in the expansion chamber (Fig. 2, 45).

Re claim 19, Lubsen et al. shows the claimed invention except that the pressure of the gaseous flow in the principal jet is between 2.5 bars and 3.5 bars, and the diameter of the calibrated cylindrical portion of the first venturi is between 0.3 mm and 1 mm, permitting the delivery of liquid 15 ml/min and 40 ml/min. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use said pressure and said diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lubsen et al. (US Pat No 4,382,552) in view of Abplanalp et al. (US Pat No 6,062,493) as applied to claims 15-19 above, and further in view of Wanson et al. (FR 2,487,782).

Re claim 20, Lubsen et al. does not show that it additionally comprises means for affecting a third fractional distillation of said liquid.

However, Wanson et al. does teach a third fractional distillation of said liquid (Fig. 1, 7).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the nozzle of Lubsen et al. with the third fractional distillation of Wanson et al. as use of fractional distillation is known in the art.

### ***Response to Arguments***

Applicant's arguments filed 7/22/2009 have been fully considered but they are not persuasive. Regarding applicant's arguments against the rejections via Lubsen et al. and subsequent art of record that all fail to teach an apparatus performing "fractional distillation" as claimed, applicant is correct. However, it is the examiner's understanding of the subject of fractional distillation that he still maintains his rejections due to the fact that applicant's invention neither shows performance of fractional distillation but of a fine droplet atomizer. According to the definition of fractional distillation from multiple sources, it is the process by which chemical mixtures are separated by their differing boiling points and broken down into their component parts. Vapors from a boiling solution are passed along a column. The temperature of the column gradually decreases along its length, components with a higher boiling point condense on the column and return to the solution while components with a lower boiling point pass through the column and are collected. None of applicant's specification, drawings or claims demonstrates this process. What is shown is a fine droplet atomizer utilizing venturi to increase the pressure of the fluids flowing toward the

lower pressure outlet which then allows the fluids to atomize into fine droplets. Lubsen et al. demonstrates this utilizing the same means for "effecting a fractional distillation."

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **STEVEN CERNOCH** whose telephone number is (571)270-3540. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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